



**Rules and  
Regulations for  
the Classification  
of Ships, July 2012**

**Notice No. 7**

Effective Date of Latest  
Amendments:

See page 1

Issue date: March 2013

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# RULES AND REGULATIONS FOR THE CLASSIFICATION OF SHIPS, *July 2012*

## Notice No. 7

This Notice contains amendments within the following Sections of the *Rules and Regulations for the Classification of Ships, July 2012*. The amendments are effective on the dates shown:

| <b>Part</b> | <b>Chapter</b> | <b>Section</b> | <b>Effective date</b> |
|-------------|----------------|----------------|-----------------------|
| 1           | 2              | 2              | 1 July 2013           |
| 1           | 3              | 1 to 7, 17     | 1 July 2013           |
| 3           | 1              | 2              | 1 July 2013           |
| 3           | 1              | 8              | Corrigendum           |
| 3           | 2              | 3              | 1 July 2013           |
| 3           | 3              | 4              | 1 July 2013           |
| 3           | 9              | 4              | 1 July 2013           |
| 3           | 16             | 3, 5, 7        | 1 July 2013           |
| 4           | 2              | 1 to 5, 11, 12 | 1 July 2013           |
| 4           | 2              | 6              | Corrigendum           |
| 4           | 4              | Whole Chapter  | Corrigendum           |
| 4           | 7              | 12             | 1 July 2013           |
| 8           | 1              | 1              | 1 July 2013           |

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules and Regulations for the Classification of Ships, July 2012* are to be read in conjunction with this Notice No. 7. The status of the Rules is now:

|                 |                 |                             |
|-----------------|-----------------|-----------------------------|
| Rules for Ships | Effective date: | July 2012                   |
| Notice No. 1    | Effective date: | 1 July 2012                 |
| Notice No. 2    | Effective date: | 1 October 2012              |
| Notice No. 3    | Effective date: | 1 January 2013 & Corrigenda |
| Notice No. 4    | Effective date: | 1 January 2013              |
| Notice No. 5    | Effective date: | 1 January 2013              |
| Notice No. 6    | Effective date: | 1 February 2013             |
| Notice No. 7    | Effective date: | 1 July 2013 & Corrigenda    |

## Part 1, Chapter 2

### Classification Regulations

Effective date 1 July 2013

#### ■ Section 2

#### Character of classification and class notations

#### 2.3 Class notations (hull)

(Part only shown)

2.3.17 **ShipRight notations.** The following notations are associated with LR's ShipRight procedures and may be assigned in conjunction with the **ShipRight** notation as considered appropriate by the Classification Committee, on application from the Owners. The requirements pertaining to these notations and the (hull) ShipRight procedures are given in Pt 3, Ch 16.

**ShipRight** This notation (Fatigue Design Ice) will be assigned  
**FDA ICE** when an appraisal has been made for the fatigue performance of the ship structure when navigating in ice.

(Part only shown)

2.3.18 When **ShipRight SDA**, **ShipRight FDA**, or **ShipRight FDA plus (years, WW)** or **ShipRight FDA ICE** are assigned, the precise technical conditions of the appraisal will be made available to Owners.

**ShipRight** This notation (Anti-Corrosion System) may be  
**ACS(C)** assigned when coating specification application and inspection for cargo oil tanks (denoted by C) have been verified according to ShipRight procedures.

**ShipRight** This notation (Anti-Corrosion System) may be  
**ACS(V)** assigned when coating specification application and inspection for void spaces (denoted by V) have been verified according to ShipRight procedures.

2.3.19 Where LR's ShipRight SDA procedure has been applied individually or where ShipRight SDA, ShipRight FDA, or ShipRight FDA plus (years, WW) or ShipRight FDA ICE and ShipRight CM procedures have all been applied, whether on a voluntary or mandatory basis, these particular class notations will appear in column 4 of the *Register Book*.

#### 2.8 Descriptive notes

(Part only shown)

2.8.3 Where LR's ShipRight procedures for the following have been applied on a voluntary basis, then a descriptive note will, at the Owner's request, be entered in column 6 of the *Register Book*, preceded by the word **ShipRight** (see also *ShipRight Procedures Overview*, Pt 3, Ch 16 and Pt 5, Ch 21):

**SEA(HSS-n)** Ship Event Analysis (Hull Surveillance Systems) for monitoring of the ship's hull girder stresses and motions.

**SEA(ICE)** Ship Event Analysis for monitoring of the ship's hull girder stresses and local ice loads when the ship is navigating in ice.

## Part 1, Chapter 3

### Periodical Survey Regulations

Effective date 1 July 2013

#### ■ Section 1

#### General

#### 1.5 Definitions

~~1.5.15 **Substantial Corrosion** is wastage of individual plates and stiffeners in excess of 75 per cent of allowable margins, but within acceptable limits. For ships built in accordance with the Common Structural Rules (CSR), substantial corrosion is an extent of corrosion such that the assessment of the corrosion pattern indicates a gauged (or measured) thickness between  $t_{ren} + 0,5$  mm and  $t_{ren}$ . Renewal thickness ( $t_{ren}$ ) is the minimum allowable thickness, in mm, below which renewal of the structural members is to be carried out.~~

1.5.15 **Substantial Corrosion** is wastage of individual plates and stiffeners in excess of 75 per cent of allowable margins, but within acceptable limits. For ships built in accordance with the Common Structural Rules (CSR), substantial corrosion is an extent of corrosion such that the assessment of the corrosion pattern indicates a gauged (or measured) thickness between  $t_{ren} + 0,5$  mm and  $t_{ren}$ . Renewal thickness ( $t_{ren}$ ) is the minimum allowable thickness, in mm, below which renewal of the structural members is to be carried out.

1.5.16 Steel renewal requirements have been separately determined according to date of contract for construction for:  
(a) cargo hold hatch covers and coamings under IACS UR S21 and UR S21A; and  
(b) bulk carriers' corrugated transverse watertight cargo hold bulkheads under IACS UR S18. See 5.6, 6.7 and 7.7.

In these cases, the net thickness,  $t_{\text{net}}$ , is the minimum net thickness of the structural member, excluding any corrosion addition, and is defined in Pt 4, Ch 7, 12.1.2 for Hatch Covers and Pt 4, Ch 7, 10.4.10 for Transverse Bulkheads.

*Existing paragraphs 1.5.16 to 1.5.26 have been renumbered 1.5.17 to 1.5.27.*

## Section 2

### Annual Surveys – Hull and machinery requirements

#### 2.2 Annual Surveys

2.2.29 The Surveyor is to carry out an examination and thickness measurement of structure identified at the previous Special Survey or Intermediate Survey as having substantial corrosion, as defined in 1.5. This requirement does not apply to cargo tanks of oil tankers and chemical tankers. The extent of thickness measurements is to be in accordance with the appropriate tables in Sections 5, 6, 7 or 8, as applicable, to determine the full extent of the corrosion pattern. The survey will not be considered complete until these additional thickness measurements have been carried out. For cargo holds and ballast tanks of bulk carriers built in accordance with the IACS Common Structural Rules (CSR), the annual thickness measurement may be dispensed with where a protective coating has been applied in accordance with the coating manufacturer's requirements and is maintained in good condition. Steel renewal requirements have been separately determined according to date of contract for construction for:

- (a) cargo hold hatch covers and coamings under IACS UR S21 and UR S21A; and
- (b) bulk carriers' corrugated transverse watertight hold bulkheads under IACS UR S18.

Where the gauged thickness is within the range  $t_{\text{net}} + 0,5$  mm and  $t_{\text{net}} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal. See 5.6.7, 6.7.5 and 7.7.4.

*(Part only shown)*

2.2.33 For **bulk carriers**, in addition to the applicable requirements of 2.2.1 to 2.2.29, the following are to be dealt with, where applicable:

- (b) Where substantial corrosion, as defined in 1.5, has been noted then additional measurements are to be carried out in accordance with Tables 3.6.5, 3.6.6, 3.6.7, 3.6.8, 3.6.9 and 3.6.10. The survey will not be considered complete until these additional thickness measurements have been carried out.

For cargo holds and ballast tanks of bulk carriers built in accordance with the IACS Common Structural Rules (CSR), the annual thickness measurement may be dispensed with where a protective coating has been applied in accordance with the coating manufacturer's requirements and is maintained in good condition. Steel renewal requirements have been separately determined according to date of contract for construction for:

- (a) cargo hold hatch covers and coamings under IACS UR S21; and

- (b) corrugated transverse watertight hold bulkheads under IACS UR S18.

Where the gauged thickness is within the range  $t_{\text{net}} + 0,5$  mm and  $t_{\text{net}} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal. See 5.6.7 and 6.7.5.

*(Part only shown)*

2.2.34 For **general dry cargo ships**, in addition to the applicable requirements of 2.2.1 to 2.2.29, the following are required for ships over 10 years of age:

- (b) When considered necessary by the Surveyor, thickness measurement is to be carried out. If the results of thickness measurement indicate substantial corrosion, the extent of thickness measurement is to be in accordance with Table 3.5.6 in Section 5. The survey will not be considered complete until these additional thickness measurements have been carried out. Steel renewal requirements have been separately determined according to date of contract for construction for cargo hold hatch covers and coamings under IACS UR S21A. Where the gauged thickness is within the range  $t_{\text{net}} + 0,5$  mm and  $t_{\text{net}} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal. See 5.6.7.

*(Part only shown)*

2.2.35 For **general dry cargo ships**, in addition to the applicable requirements of 2.2.1 to 2.2.29, the following are required for ships over 15 years of age:

- (e) When considered necessary by the Surveyor, thickness measurement is to be carried out. If the results of thickness measurement indicate substantial corrosion, the extent of thickness measurement is to be in accordance with Table 3.5.6 in Section 5. The survey will not be considered complete until these additional thickness measurements have been carried out. Steel renewal requirements have been separately determined according to date of contract for construction for cargo hold hatch covers and coamings under IACS UR S21A. Where the gauged thickness is within the range  $t_{\text{net}} + 0,5$  mm and  $t_{\text{net}} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal. See 5.6.7.

■ **Section 3**  
**Intermediate Surveys – Hull and machinery requirements**

**3.2 Intermediate Surveys**

(Part only shown)

3.2.14 For **bulk carriers**, in addition to the applicable requirements of 3.2.1 to 3.2.9, the following are to be dealt with on ships over five years of age:

- (c) Steel renewal requirements have been separately determined according to date of contract for construction for:
  - (i) cargo hold hatch covers and coamings under IACS UR S21; and
  - (ii) corrugated transverse watertight hold bulkheads under IACS UR S18.

Where the gauged thickness is within the range  $t_{net} + 0,5$  mm and  $t_{net} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal. See 5.6.7 and 6.7.5.

- ~~(c)~~(d) For bulk carriers built in accordance with the IACS Common Structural Rules (CSR), the areas identified with substantial corrosion in cargo holds and ballast tanks may be either:

(Part only shown)

3.2.19 For **general dry cargo ships**, in addition to the applicable requirements of 3.2.1 to 3.2.9, the following are required for ships over 10 years of age:

- (b) Where considered necessary by the Surveyor, thickness measurement is to be carried out. If the results of thickness measurement indicate substantial corrosion, the extent of thickness measurement is to be in accordance with Table 3.5.6 in Section 5. The survey will not be considered complete until these additional thickness measurements have been carried out. Steel renewal requirements have been separately determined according to date of contract for construction for cargo hold hatch covers and coamings under IACS UR S21A. Where the gauged thickness is within the range  $t_{net} + 0,5$  mm and  $t_{net} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal. See 5.6.7.

■ **Section 4**  
**Docking Surveys and In-water Surveys – Hull and machinery requirements**

**4.2 Docking Surveys**

4.2.6 The clearance in the sternbush ~~or~~ and the efficiency of the oil glands ~~is~~ **are** to be ascertained.

■ **Section 5**  
**Special Survey – General – Hull requirements**

**5.6 Thickness measurement**

5.6.7 Steel evaluation of hatch covers on exposed decks and hatch coamings and closing arrangements of cargo holds on ships with contract for construction on or after 1 July 2012 is to be in accordance with IACS UR S21A. Further information is provided in the LR document *Thickness Measurement and Close-Up Survey Guidance*.

5.6.8 Steel renewal is required where the gauged thickness is less than  $t_{net} + 0,5$  mm. For definition of  $t_{net}$ , see Pt 4, Ch 7,12.1.2.

5.6.9 Where the gauged thickness is within the range  $t_{net} + 0,5$  mm and  $t_{net} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal.

■ **Section 6**  
**Special Survey – Bulk carriers – Hull requirements**

**6.7 Thickness measurement**

**Table 3.6.2 Close-up Survey – Double skin bulk carriers (excluding ore carriers)**

| Special Survey II<br>(Ships 10 years old)                                                                                |                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| (2) <del>Forward and aft transverse bulkheads, including stiffening system, in a complete ballast tank, see Note 1</del> | (2) Forward and aft transverse bulkheads, including stiffening system, in a complete ballast tank, see Note 1 |

6.7.6 Steel renewal evaluation of corrugated transverse watertight bulkheads on bulk carriers of 150 m in length and above, intending to carry solid bulk cargoes having a density of  $1,0$  t/m<sup>3</sup> with contract for construction on or after 1 July 1998 is to be in accordance with IACS UR S18. These requirements are not applicable to bulk carriers with class notation ESN Hold 1 and ESN – All Holds, or ships built in accordance with the IACS Common Structural Rules (CSR). Further information is provided in the LR document *Thickness Measurement and Close-Up Survey Guidance*.

6.7.7 Steel renewal is required where the gauged thickness is less than  $t_{net} + 0,5$  mm. For definition of  $t_{net}$ , see Pt 4, Ch 7,10.4.10.

6.7.8 Where the gauged thickness is within the range  $t_{\text{net}} + 0,5$  mm and  $t_{\text{net}} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal.

6.7.9 Hatch covers of cargo holds' steel renewal evaluation of bulk carriers with contract for construction on or after 1 July 1998 is to be in accordance with IACS UR S21. These requirements are not applicable to ships built in accordance with the IACS Common Structural Rules (CSR). Further information is provided in the LR document *Thickness Measurement and Close-Up Survey Guidance*.

6.7.10 Steel renewal is required where the gauged thickness is less than  $t_{\text{net}} + 0,5$  mm. For definition of  $t_{\text{net}}$ , see Pt 4, Ch 7,12.1.2.

6.7.11 Where the gauged thickness is within the range  $t_{\text{net}} + 0,5$  mm and  $t_{\text{net}} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal.

6.7.12 Steel renewal evaluation of hatch covers and hatch coamings of cargo holds on bulk carriers and ore carriers with contract for construction on or after 1 January 2004 is to be in accordance with IACS UR S21. These requirements are not applicable to ships built in accordance with the IACS Common Structural Rules (CSR). Further information is provided in the LR document *Thickness Measurement and Close-Up Survey Guidance*.

6.7.13 Steel renewal is required where the gauged thickness is less than  $t_{\text{net}} + 0,5$  mm. For definition of  $t_{\text{net}}$ , see Pt 4, Ch 7,12.1.2.

6.7.14 Where the gauged thickness is within the range  $t_{\text{net}} + 0,5$  mm and  $t_{\text{net}} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal.

7.7.5 Steel renewal is required where the gauged thickness is less than  $t_{\text{net}} + 0,5$  mm. For definition of  $t_{\text{net}}$ , see Pt 4, Ch 7,12.1.2.

7.7.6 Where the gauged thickness is within the range  $t_{\text{net}} + 0,5$  mm and  $t_{\text{net}} + 1,0$  mm, a coating (applied in accordance with coating manufacturer's requirements) or annual gauging may be adopted as an alternative to steel renewal.

## Section 17

### Screwshafts, tube shafts and propellers

#### 17.5 Partial Survey

17.5.2 The Partial Survey is to consist of the propeller being backed off in any keyed shaft and the top half of the cone examined by an efficient crack detection method for which removal of the key will be required. ~~Oil gland and seals are to be examined and dealt with as necessary. Wear down is to be measured and found satisfactory.~~ On ships less than 15 years old, propellers with keyless connections to the screwshaft are not required to be backed off. Exposed areas of screwshaft, oil gland and seals are to be examined and dealt with as necessary. Wear down is to be measured, recorded and reviewed at each screwshaft survey and found satisfactory. Propeller and fastenings are to be examined.

## Section 7

### Special Survey – Oil tankers (including ore/oil ships and ore/bulk/oil ships) – Hull requirements

#### 7.7 Thickness measurement

7.7.4 Steel renewal evaluation of hatch covers and hatch coamings of cargo holds on combination carriers with contract for construction on or after 1 January 2004 is to be in accordance with IACS UR S21. These requirements are not applicable to ships built in accordance with the IACS Common Structural Rules (CSR). Further information is provided in the LR document *Thickness Measurement and Close-Up Survey Guidance*.

Part 3, Chapter 1  
General

Effective date 1 July 2013

■ Section 2  
Direct calculations

2.2 ShipRight—Design, construction and lifetime  
ship care procedures

2.2.1 LR's direct calculation procedures and facilities are summarised in two documents entitled *ShipRight Procedures Manual* and *Marine Software Guide*.

2.3 2.2 Submission of direct calculations

2.2.1 LR's direct calculation procedures and facilities are summarised in the document entitled *ShipRight Procedures Overview*.

Existing paragraphs 2.3.1 to 2.3.3 have been renumbered 2.2.2 to 2.2.4.

CORRIGENDUM

■ Section 8  
Inspection, workmanship and  
testing procedures

8.3 Testing procedures

Table 1.8.1 Testing requirements (Part only shown)

|       |                                                                                                                                                                                                           |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NOTES |                                                                                                                                                                                                           |
| 9.    | See also SOLAS Reg. II-1/18 Reg. II-1/16. Where the door has had the full hydrostatic test before installation, the hose test may be replaced by careful visual examination after full operational tests. |

## Part 3, Chapter 2

### Materials

Effective date 1 July 2013

#### ■ Section 3

#### Corrosion protection

#### 3.6 Protective coatings for dedicated sea water ballast tanks of all types of ships and double-side skin spaces of bulk carriers

3.6.1 For ships that are required to comply with IMO Resolution MSC.215(82), *Performance Standards for Protective Coatings (PSPC)*, all dedicated sea water ballast tanks of all types of ships and double-side skin spaces of bulk carriers are to comply with all of the requirements of the Resolution, see ShipRight procedure *Anti-Corrosion Systems Notations*.

3.6.3 The following tanks are not considered to be dedicated sea-water ballast tanks and are therefore exempted from the application and requirement of the IMO PSPC:

- (a) ballast tanks identified as 'Spaces included in Net Tonnage' in the 1969 ITC Certificate;
- (b) sea-water ballast tanks in passenger vessels also designated for the carriage of grey water or black water; or
- (c) sea-water ballast tanks in livestock carriers also designated for the carriage of the livestock dung.

Alternative provisions are to be made for the protection of these tanks.

## Part 3, Chapter 3

### Structural Design

Effective date 1 July 2013

#### ■ Section 4

#### Bulkhead requirements

#### 4.2 Collision bulkhead

4.2.1 A collision bulkhead shall be fitted which shall be watertight up to the bulkhead deck. This bulkhead shall be located at a distance from the forward ~~perpendicular~~ side of the stem, on the waterline on which  $L_L$  is measured, of not less than  $0,05L_L$  or 10 m, whichever is the less, and, except as may be permitted by the Administration, not more than  $0,08L_L$  or  $0,05L_L + 3$  m, whichever is the greater.

4.2.2 Where any part of the ship below the waterline extends forward of the forward ~~perpendicular~~ side of the stem, on the waterline on which  $L_L$  is measured, e.g., a bulbous bow, the distances stipulated in 4.2.1 ~~shall~~ are to be measured from a point either:

- (a) at the mid-length of such extension;
- (b) at a distance  $0,015L_L$  forward of the forward ~~perpendicular~~ side of the stem, on the waterline on which  $L_L$  is measured; or
- (c) at a distance 3 m forward of the forward ~~perpendicular~~ ~~whichever gives the smallest measurement.~~ side of the stem, on the waterline on which  $L_L$  is measured, whichever is the least.

## Part 3, Chapter 9

### Special Features

Effective date 1 July 2013

#### Section 4

#### Movable decks

##### 4.1 Classification

~~4.1.1 Movable decks other than those described in 4.1.2 are not a classification item, although consideration must be given to associated supporting structure. Where movable decks are fitted, it is recommended that they be based on the requirements of this Section.~~

~~4.1.2 At the Owner's or Builder's request, however, movable decks will be included as a classification item, and the class notation 'movable decks' will be entered in the Register Book. In such cases, all movable decks on board the ship are to comply with the requirements of this Section.~~

4.1.1 Movable vehicle decks hoisted by means of a hydraulic or electrical winch, or lifted by a mechanical lift on board the ship, are to comply with Chapter 6 of LR's *Code for Lifting Appliances in a Marine Environment*.

4.1.2 Movable decks other than described in 4.1.1, and which are subjected to general cargo loading, are to comply with the requirements of this Section.

##### 4.4 Loading

~~4.4.1 Details of the deck loading resulting from the proposed stowage arrangements of vehicles are to be supplied by the Shipbuilder. These details are to include the axle and wheel spacing, the wheel load, type of tyre and tyre print dimensions for the vehicles. For design purposes the axle loading is to be taken as not less than 5,0 kN (0,6 tonne f).~~

~~4.4.2 Where it is proposed also to use the decks for general cargo, the design loadings are to be submitted for consideration.~~

4.4.1 Design loading for general cargo is to be specified on the plans, together with details of fork lift trucks where appropriate, and submitted for consideration.

##### 4.6 Pontoon webs and stiffeners

4.6.1 The section modulus of webs and stiffening of steel pontoons is to be not less than:

~~(a) For general purpose cargo decks where fork lift trucks may be used:~~

$$Z = (0,375K_1 P l_e + 0,00125K_2 h s l_e^2) k \text{ cm}^3$$

for general-purpose cargo decks where fork lift trucks may be used

~~(b) For decks designed for the carriage of vehicles only:~~

$$Z = 1,30K_1 P l_e k \text{ cm}^3$$

where the values of  $K_1$  and  $K_2$  are given in Table 9.4.1, and

$h$  = load height of cargo on the deck, where this is proposed to be carried, in metres

$P$  = total weight, in tonnes, of the vehicle divided by the number of axles. Where the distribution of weight is not uniform,  $P$  is to be taken as the greatest axle load. For fork lift trucks the total weight is to be applied to one axle. the total fork lift truck load, in tonnes, is to be applied to one axle.

## Part 3, Chapter 16

## ShipRight Procedures for the Design, Construction and Lifetime Care of Ships

Effective date 1 July 2013

## ■ Section 3 Fatigue design assessment

### 3.1 Fatigue Design Assessment notation—FDA

3.1.2 At the Owner's request and in order to enhance safety, the **ShipRight FDA ICE** *Fatigue Induced by Ice Loading Procedure* may be applied. This procedure is supplementary to the FDA procedures and is to assess fatigue damage induced by ice loads for ships navigating in ice-covered regions. The objective of **ShipRight FDA ICE** procedure is to provide technical guidelines to assess fatigue at the end connections of ice belt regions under ice loading. See Pt 1, Ch 2,2.3.16.

## ■ Section 5 Ship Event Analysis

### 5.1 Ship Event Analysis —Descriptive notes **SEA(HSS-n)**

~~5.1.1 At the Owner's request, and in order to enhance safety and awareness on board during ship operation, provisions can be made for a hull surveillance system that monitors the hull girder stresses and motions of the ship and warns the ship's personnel that these levels or the frequency and magnitude of slamming motions are approaching a level where corrective action is advisable.~~

~~5.1.2 Where a hull surveillance system is fitted, the descriptive note **SEA(HSS-n)** will be assigned. The extension **-n** signifies the number of fitted strain gauges connected to the system. The following option extensions will be added to the descriptive note:~~

- ~~**E** The display of the relevant information in the cargo control area.~~
- ~~**M** The display and recording of the ship's motion.~~
- ~~**N** The facility to display and record navigational information.~~

~~**VDR** An interface with the ship's voyage data recorder system to enable the recording of hull stress, ship motion and hull pressure information.~~

~~The appropriate descriptive note will be entered in column 6 of the Register Book, see also Pt 1, Ch 2,2.7.~~

~~5.1.3 For the requirements, see the ShipRight Procedures and the Provisional Rules for the Classification of Ship Event Analysis Systems.~~

5.1.1 At the Owner's request and in order to enhance safety and awareness on board during ship operation, the *ShipRight Ship Event Analysis Procedure* applies to all ships where it is intended to provide a hull surveillance system for:

(a) Monitoring of the ship's hull girder stresses and motions, and warning the ship's personnel that these stress levels or the frequency and magnitude of slamming motions

are approaching a level where corrective action is advisable.

- (b) Monitoring of the ship's hull girder stresses and local ice loads when the ship is navigating in ice, and warning the ship's personnel that the load levels or the frequency and magnitude of ice impacts are approaching a level where corrective action is advisable.

## ■ Section 7 Protective coating systems in water ballast tanks and double-side skin spaces

### 7.3 Protective coating systems in the cargo oil tanks of crude oil tankers – ShipRight Notation ACS(C)

7.3.1 For ships that are required to comply with IMO Resolution MSC.291(87), Adoption of Amendments to the *International Convention for the Safety of Life at Sea, 1974*, as amended, Owners may request to receive the optional notation **ShipRight ACS(C)**, which indicates that the cargo oil tanks are protected in compliance with IMO Resolution MSC.288(87), *Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers*, see *ShipRight Procedure Anti-Corrosion System Notations*.

7.3.2 **ShipRight ACS(C)** will be entered in Column 4 of the *Register Book* to indicate that the ship's cargo oil tanks are protected using approved materials in accordance with IMO Resolution MSC.291(87), *Adoption of Amendments to the International Convention for the Safety of Life at Sea, 1974*, as amended.

7.3.3 When in compliance with IMO Resolution MSC.291(87), but the **ShipRight ACS(C)** procedure is not requested, this compliance may be indicated on the applicable certification.

### 7.4 Protective coatings for void spaces on bulk carriers and oil tankers – ShipRight Notation ACS(V)

7.4.1 For ships within the scope of IMO Resolution MSC.244(83), *Adoption of Performance Standard for Protective Coatings for Void Spaces on Bulk Carriers and Oil Tankers*, Owners may request to receive the optional notation **ShipRight ACS(V)**, which indicates that the void spaces are protected according to the *ShipRight Procedure Anti-Corrosion System Notations*.

7.4.2 **ShipRight ACS(V)** will be entered in Column 4 of the *Register Book* to indicate that the ship's void spaces are protected in accordance with IMO Resolution MSC.244(83), *Adoption of Performance Standard for Protective Coatings for Void Spaces on Bulk Carriers and Oil Tankers*.

## Part 4, Chapter 2

### Ferries, Roll on–Roll off Ships and Passenger Ships

Effective date 1 July 2013

#### ■ Section 1

##### 1.1 Application

~~1.1.4 The scantlings of structural items may be determined by direct calculation. For passenger ships where it is considered that the superstructure will be subjected to a significant load from flexure of the hull girder; or, where it is required to utilise the load-carrying capability of the superstructure for longitudinal strength, the scantlings of the primary supporting structure are to be assessed by direct calculations and the ShipRight notations SDA and CM are mandatory, see 1.3 and Section 11.~~

1.1.4 The scantlings of the primary supporting structure for multi-decked passenger ships are to be assessed by direct calculation, in accordance with the *ShipRight Structural Design Assessment Procedure* for passenger ships, wherever:

- (a) the superstructure will be subjected to significant load from flexure of the hull girder; or
- (b) it is required to utilise the load-carrying capability of the superstructure for longitudinal strength; or
- (c) a limited number of transverse bulkheads above the bulkhead deck are present to carry the racking response.

See also 1.3.7 and Section 13.

1.1.5 The scantlings of the primary supporting structure of a vehicle ferry, passenger/vehicle ferry, roll on–roll off cargo ship, roll on–roll off passenger ship or vehicle carrier are to be assessed by direct calculation in accordance with the *ShipRight Structural Design Assessment Procedure* for Ro–Ro ships and the *ShipRight Construction Monitoring Procedure*. See also 1.3.7 and Section 13.

1.1.6 For the purpose of providing operational information to the Master for safe return to port after a flooding casualty, passenger ships having a Load Line length of 120 m or more or having three or more main vertical zones are to have:

- (a) an onboard stability computer; or
- (b) shore-based support.

Where an onboard computer system having a stability computation capability is provided, the system is to be certified in accordance with LR's document entitled *Approval of Longitudinal Strength and Stability Calculations Programs*, see also Pt 1, Ch 2, 1.1.11.

#### ■ Section 2

##### Longitudinal strength

##### 2.2 Calculation of hull section modulus

2.2.1 The calculation of section modulus is to be in accordance with Pt 3, Ch 3,3.4 and the additional notes in this Section. In general, the effective sectional area of continuous longitudinal strength members, after deduction of openings, is to be used for the calculation of midship section modulus. For ships where the effectiveness of the superstructure is only partial due to the presence of large or numerous shell openings or discontinuities in the shell envelope, then an equivalent section modulus for the purposes of this ~~section~~ Section may be derived using direct calculations in accordance with the SDA procedure relevant to the ship type.

#### ■ Section 3

##### Deck structure

##### 3.4 Deck supporting primary structure

3.4.4 ~~For passenger ships direct~~ Direct calculations should be carried out ~~generally~~ in accordance with the SDA procedure relevant to the ship type.

~~3.4.5 For roll on roll off cargo ships and passenger ships and passenger/vehicle ferries with large vehicle stowage spaces, see 5.1.5.~~

Existing paragraph 3.4.6 has been renumbered 3.4.5.

#### ■ Section 4

##### Shell envelope plating

##### 4.2 Bow flare and wave impact pressures

(Part only shown)

4.2.1 ~~The bow flare wave impact pressure and wave impact pressure on other parts of the side shell plating close to and above the design waterline.~~ This Section is applicable to:

- (a) bow flare region;
- (b) sides and undersides of sponsons; and
- (c) other parts of the side shell plating close to and above the design waterline that are expected to be subjected to wave impact pressures.

The wave impact pressure,  $P_{bf}$ , in kN/m<sup>2</sup> due to relative motion is to be taken as:

$$P_{bf} = 0,5 (K_{bf} V_{bf}^2 + K_{rv} H_{rv} V_{rv}^2) \text{ kN/m}^2$$

where

$K_{bf}$  = hull form shape coefficient for wave impacts

$$= \frac{\pi}{\tan \beta_p} \quad \text{for } \beta_p \geq 10$$

$$= 28 (1 - \tan (2\beta_p)) \quad \text{for } \beta_p < 10$$

$$= \frac{\pi}{\tan \psi} \quad \text{for } \psi \geq 10$$

$$= 28 (1 - \tan (2\psi)) \quad \text{for } \psi < 10$$

$\omega_e$  = effective encounter wave frequency

$$= \omega \left( 1 + \frac{0,4\omega V_{sl}}{g} \right)$$

$$= \omega \left( 1 + \frac{0,4q\omega V_{sl}}{g} \right)$$

where

$$q = 1,0 \quad \text{for } \frac{X}{L} \geq 0,5$$

$$= -0,6 \quad \text{for } \frac{X}{L} < 0,5$$

$f_{sl}$  = probability level correction factor for relative vertical motion

$$= 1,2$$

$$= 1,0 \quad \text{for } C_b \leq 0,6$$

$$= 1,2 \quad \text{for } C_b > 0,6$$

$H_{rv}$  = relative wave heading coefficient

$$= 1 \quad \text{for } \gamma_p > 45$$

$$= \cos(45 - \gamma_p) \quad \text{for } \gamma_p \leq 45$$

$$\text{for } \frac{X}{L} \geq 0,5$$

$$= 1 \quad \text{for } \gamma_p > 45$$

$$= \cos(45 - \gamma_p) \quad \text{for } \gamma_p \leq 45$$

$$\text{for } \frac{X}{L} < 0,5$$

$$= 0$$

The point at which the following angles are to be measured for assessment of plating and stiffeners is detailed in Table 2.4.2:

$\alpha_p$  = buttock angle measured in the longitudinal plane, in degrees, see Fig. 2.4.1 and Table 2.4.2

$\beta_p$  = flare angle measured in the transverse plane, in degrees, see Fig. 2.4.1. For bow flare regions where the bow is non prismatic, i.e. changing rapidly, then  $\beta$  may be taken as the maximum of  $\alpha$  or  $\beta$

$\psi$  = effective deadrise angle, in degrees

For  $C_b > 0,6$ ,  $\psi$  is to be taken as the maximum of  $\alpha_p$  and  $\beta_p$ , see Fig. 2.4.1 and Table 2.4.2

For  $C_b \leq 0,6$ ,  $\psi$  is to be taken as the maximum of  $\alpha_p$  and  $\beta$

where

$$\beta = \beta_p - 10^\circ, \text{ but is to be taken as not less than } 0^\circ$$

NOTE

The  $10^\circ$  deduction is to allow for the effects of roll motion on the impact pressures.

$\gamma_p$  = waterline angle measured in the horizontal plane, in degrees, see Fig. 2.4.1 and Table 2.4.2.

NOTE

Where only two angles are known and are measured in orthogonal planes, then the third angle may be obtained by the following expression:

$$\alpha_p = \tan^{-1} (\tan \beta_p \tan \gamma_p)$$

$V$  = speed, in knots, as defined in 1.5.1 for bow locations

$V$  = 0 for stern locations

$V$  = speed, in knots

$$\text{for } \frac{X}{L} \geq 0,5$$

= maximum service speed, in knots, as defined in Pt 3, Ch 1,6

$$\text{for } \frac{X}{L} < 0,5$$

= 0 knots, for passenger ships

= 5 knots, for all other ship types

$C_b$  = Rule block coefficient.

If the area of plating under consideration has a waterline angle which is re-entrant or decreasing, e.g. in the stern region, then the relative wave heading coefficient,  $H_{rv}$ , and the speed  $V$  used in the derivation of  $H_{rv}$ , are to be taken as zero.

**Table 2.4.2** Positions at which  $\alpha_p$ ,  $\beta_p$  and  $\gamma_p$  are to be measured

| Framing system        | Plating                                                         | Secondary stiffeners                 |
|-----------------------|-----------------------------------------------------------------|--------------------------------------|
| Longitudinally framed | Mid-distance between longitudinals                              | Mid-distance between frames          |
| Transversely framed   | 0,5s from the bottom edge of the plate strake or primary member | Mid-distance between primary members |

## Section 5

### Shell envelope framing

#### 5.1 Side structure

5.1.5 Where bulkheads are omitted as indicated by 1.2.3, the strength of the structure is to be verified by direct calculation. The direct calculation procedure is to be agreed with LR.

#### 5.2 Strengthening for wave impact loads

5.2.6 The extents of the wave impact pressure are to be derived as follows:

(a) the vertical extent,  $g_{bfv}$ , is to be taken as:

$$g_{bfv} = \frac{4}{\sin \beta_p \sqrt{8K_{bf}}} \text{ m}$$

$$g_{bfv} = \frac{4}{\sin \psi \sqrt{8K_{bf}}} \text{ m}$$

(b) the horizontal extent,  $g_{bfh}$ , is to be taken as:

$$g_{bfh} = 4 \text{ m}$$

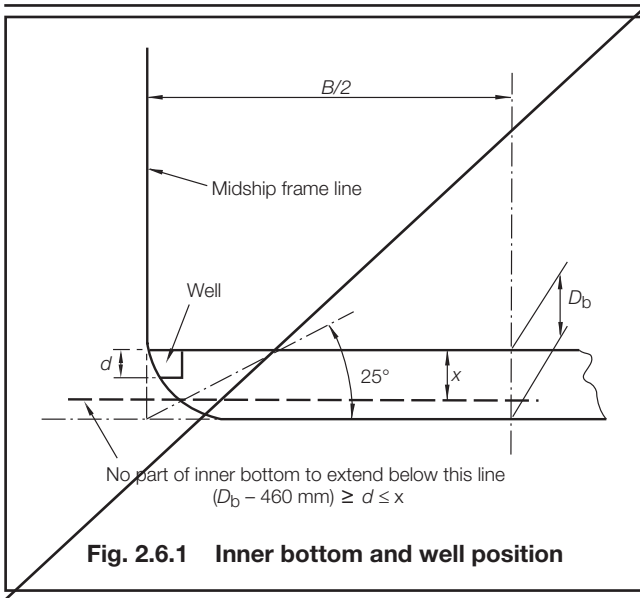
where

$K_{bf}$  and  $\beta_p$  are given in 4.2.1.

CORRIGENDUM

■ Section 6  
Double bottom

6.2 Transmission of pillar loads



Effective date 1 July 2013

■ Section 11  
Miscellaneous openings

11.4 Frame design and testing

**11.4.1 Application.** The testing requirements contained in this Section are for all exterior window and glass balustrade designs on all tiers for passenger ships regardless of length. The testing is to be carried out for characteristic window and balustrade sizes (largest, smallest) and forms (circular, semi-circular and rectangular) for each passenger ship. Window and balustrade designs, which are not covered by Type Approval Certification, will require prototype testing in order to confirm structural integrity and weather or water tightness as required. Tests are to be carried out to the satisfaction of the Surveyor.

**11.4.2 Water tightness.** A hydrostatic test is to be carried out in order to examine the water tightness of windows. This is carried out by applying the design pressure head  $H_d$ , as calculated in Section 11.3, to the external face of the window and maintained at this level for at least 15 minutes.

**11.4.3 Structural testing.** A hydrostatic test is to be carried out in order to examine the capability of the frame, mullions and glass retaining arrangements. This is carried out by applying a test pressure of  $4H_d$  ( $H_d$  as calculated in Section 11.3 for windows and Section 12.3 for balustrades) to the external face of the window. Alternatively this test may be carried out using a steel plate in place of the glass. Ideally, the steel plate should be of a suitable reduced thickness in order to simulate the flexural performance of the glass.

**11.5 Strength of mullions**

(Part only shown)

**11.5.1** The section modulus of mullions is not to be less than:

$$Z = 10,78H_d I A_m k 10^{-9} \text{ cm}^3$$

where

$a$  = see Table 2.11.4

$b$  = see Table 2.11.4

$r$  = see Table 2.11.4

Existing Table 2.12.1 has been renumbered Table 2.11.4.

Existing sub-Section 11.5 has been renumbered 11.6.

■ Section 12  
Glass structures

12.1 General

**12.1.1** The requirements of this Section apply solely to external balcony glass balustrades, as well as glass walls and wind screens when acting as balustrades.

Existing sub-Section 12.2 has been renumbered 11.5.

Existing paragraph 12.2.1 has been renumbered 11.5.1.

Existing Table 2.12.1 has been renumbered Table 2.11.4.

**12.2 Top rail of balcony balustrades**

**12.2.1** The minimum section modulus of the steel top rail of glass balcony balustrades is given by:

$$Z = L_b^2 \text{ cm}^3$$

where

$L_b$  = span of top rail, in metres.

**12.3 Glass balustrades**

**12.3.1** The minimum thickness of glass balustrades is to be not less than as given by Table 2.11.3 using a design pressure of  $H_d = 0,25 \text{ t/m}^2$  as given in Table 2.11.2, provided by continuous support along all four edges. The design pressure will be specially considered if glass balustrades are fitted in lower exposed deckhouses at a location where the design pressure from Table 2.11.2 is greater than  $0,25 \text{ t/m}^2$ .

**12.3.2** The glazing is to be of laminated construction.

**12.3.3** Balustrades and their frames and glass retaining arrangements will require prototype testing in order to confirm structural integrity in accordance with 11.4. The use of National or Internationally recognised Standards may be considered.

## Part 4, Chapter 4

### Offshore Supply Vessels

#### CORRIGENDUM

The title of Chapter 4 has been amended:

### Offshore ~~Supply~~ Support Vessels

## Part 4, Chapter 7

### Bulk Carriers

Effective date 1 July 2013

#### ■ Section 12

#### Steel hatch covers

#### 12.7 Local net plate thickness

(Part only shown)

12.7.1 The local net plate thickness of the hatch cover ~~top~~ plating is to be not less than:

$$t = F_p 15,8s \sqrt{\frac{\rho}{0,95\sigma_F}}$$

or 1 per cent of the spacing of the stiffeners or 6 mm, whichever is greater

12.7.2 For double skin hatch covers, when the lower plating is taken into account as a strength member of the hatch cover, the local net plate thickness of the hatch cover bottom plating is to be not less than:

$t = 6,5s$  mm, or

$t = 5,0$  mm, whichever is the greater

where

$s$  = stiffener spacing, in metres.

## Part 8, Chapter 1

### Application

Effective date 1 July 2013

#### ■ Section 1

#### Scope

#### 1.1 General

1.1.3 At the Owner's request and in order to enhance safety and awareness on board during ship operation, the **ShipRight SEA(ICE) Ship Event Analysis Procedure** may be applied. This procedure may be applied to all ships where it is intended to provide a hull surveillance system for monitoring of the ship's hull girder stresses and local ice loads when the ship is navigating in ice, and warning the ship's personnel that the load levels or the frequency and magnitude of ice impacts are approaching a level where corrective action is advisable. See Pt 1, Ch 2,2.7.3 and Pt 3, Ch 16,5.

1.1.4 At the Owner's request and in order to enhance safety, the **ShipRight FDA ICE Fatigue Induced by Ice Loading Procedure** may be applied. This procedure is supplementary to the FDA procedures and is to assess fatigue damage induced by ice loads for ships navigating in ice-covered regions. The objective of **ShipRight FDA ICE** procedure is to provide technical guidelines to assess fatigue at the end connections of stiffeners in the ice belt regions under ice loading. See Pt 1, Ch 2,2.3.16 and Pt 3, Ch 16,3.

**Cross-references**

Section numbering in brackets reflects any Section renumbering necessitated by any of the Notices that update the current version of the Rules for Ships.

**Part 1, Chapter 2**

|          |                                                    |
|----------|----------------------------------------------------|
| 2.1.8(b) | 2.7.3 <i>now reads</i> 2.8.3                       |
| 2.4.1    | 2.8.1 <i>now reads</i> 2.9.1 ( <i>five times</i> ) |
|          | 2.8.2 <i>now reads</i> 2.9.2                       |
|          | 2.8.3 <i>now reads</i> 2.9.3                       |
| 3.5.24   | Ch 3,2.2.27 <i>now reads</i> Ch 3,2.2.32           |
| 3.8.5    | 3.4.3 <i>now reads</i> 3.4.4                       |

**Part 1, Chapter 3**

|          |                                    |
|----------|------------------------------------|
| 9.7.9(b) | 9.6.1(d) <i>now reads</i> 9.6.2(d) |
|----------|------------------------------------|

**Part 4, Chapter 12**

|       |                                                |
|-------|------------------------------------------------|
| 8.4.1 | Pt 3, Ch 1,2.3 <i>now reads</i> Pt 3, Ch 1,2.2 |
|-------|------------------------------------------------|

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